

C l a i m s

1. Method for endoscopic application of self-closing medical clips (3), especially for stopping internal hemorrhages, in which a catheter tube (1) with its distal end is placed in the body of the living being to be treated, several clips (3) which are arranged in succession in the catheter tube (1) are advanced by an operator means located on the proximal end of the catheter tube (1) against its distal end, the frontmost clip (3) to be applied is pushed out of the distal end and is opened by an actuating means which has an actuating element (21) which acts on the frontmost clip (3), which can be moved longitudinal in the catheter tube (1) and which can be actuated from the operator means, and has a control part (25) converting its actuating force into an opening motion of the legs (5) of the clip (3), and the actuating element (21) after opening of the clip (3) is detached from the clip (3) in order to release it for the closing of its legs (5) which effects the application and is functionally linked to the clip (3) following in the catheter tube (1).
2. Device for endoscopic application of self-closing medical clips (3) in the body of a living being, especially for stopping internal hemorrhages, with a catheter tube (1) with a distal end which is to be placed in the body, and a proximal end which is assigned to an operator means, an actuating means (21, 35) extending in the catheter tube (1) from the operator means to the area of the distal end for opening the legs (5) of a clip (3) to be applied, and which has an actuating element (21) which can move longitudinally in the catheter tube (1) and which can be controlled from the operator means, as well as a control part (25) converting its actuating force into an opening motion of the legs (5) of the clip (3), wherein the actuating element (21) acts directly on the clip (3), wherein the control part (25) is provided on the distal end edge of a sleeve-like receiving part (33) which is associated with the clip (3), and into which the clip (3) on part of its length can be inserted by the actuating element (21), and wherein the clip (3) on the two adjacent legs (5) and which support each other in particular areas each have a first kink (13) to

the outside which increases the distance of the legs (5) and a following second kink (15) to the inside which is nearer the distal leg end (7) and which forms the point of mutual support of the legs (5), so that the legs are opened by the first kink (13) of the legs (5) striking the control part (25) when the clip (3) is inserted into the sleeve-like receiving part (33).

3. The device as claimed in claim 2, wherein the actuating element is a pulling element (21) and the control part is a (beveled) control surface (25) located on the end edge of the sleeve-like receiving part (33).
4. The device as claimed in claim 3, wherein the pulling element is a pull cable (21) and wherein each clip (3) for its connection to the pull cable (21) on its rear end crosspiece (9) connecting the legs (5) has two adjacent through holes (11) through which the pull cable (21) is guided in a loop (39) such that it extends in an advancing strand (24) to the clip (3) and back from the latter back in a retreating strand (24) to the operator means.
5. The device as claimed in claim 4, wherein the section of the end crosspiece (9) of the clip located between the through holes (11) is made as a predetermined breaking point (51) which can be torn by the pulling force of the pull cable (21) acting by way of the loop (39) in order to detach the pull cable (21) from the clip (3).
6. The device as claimed in claim 5, wherein on the distal end of the catheter tube (1) there is a blocking element (41) permitting passage of the sleeve-like receiving part (33) with the respective clip (3) only in the exit direction forward but which supports the sleeve-like receiving part (33) however against the motion effected by the pulling force of the pull cable (21).

7. The device as claimed in claim 6, wherein the blocking element (41) has a tube piece (43) mounted on the end of the catheter tube (1), and which has an end part which is designed as a collet has jaws (45) which run longitudinal, which normally reduce the passage width, and which can be elastically spread out of their normal position by the sleeve-like receiving part (33) of an emerging clip (3), and after returning into the normal position form a support of the emerged receiving part (33) against the pulling force of the pull cable (21).
8. The device as claimed in one of claims 4 to 7, wherein in the catheter tube (1) there are several clips (3) with the associated sleeve-like receiving part (33) in succession and wherein the pull cable (21) with the advancing strand (24) and with the retreating strand (24) is guided in each case through one or the other through hole (11) of the end crosspieces (9) of all clips (3).
9. The device as claimed in one of claims 4 to 8, wherein the actuating means for advancing the clip (3) or clips (3) located in the catheter tube (1) with the associated sleeve-like receiving part (33) has a tube (35) which can be moved in the catheter tube (1) and which has an end edge (37) which forms a plunger for contact with the facing back end of the receiving part (33) of the respective clip (3) which is to be advanced.
10. The device as claimed in one of claims 7 to 9, wherein the back end of the sleeve-like receiving part (33) opposite the beveled control surface (25) has an axially projecting shoulder (47) for centering in the collet-like end part of the blocking element (41).